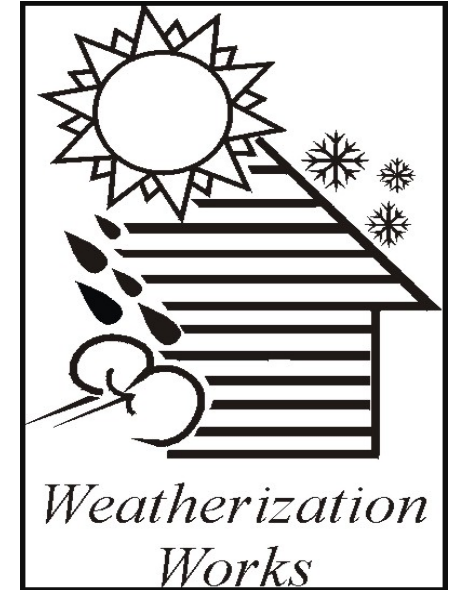


Smart Cities Address Equity: The Case of Low-Income Energy Burdens

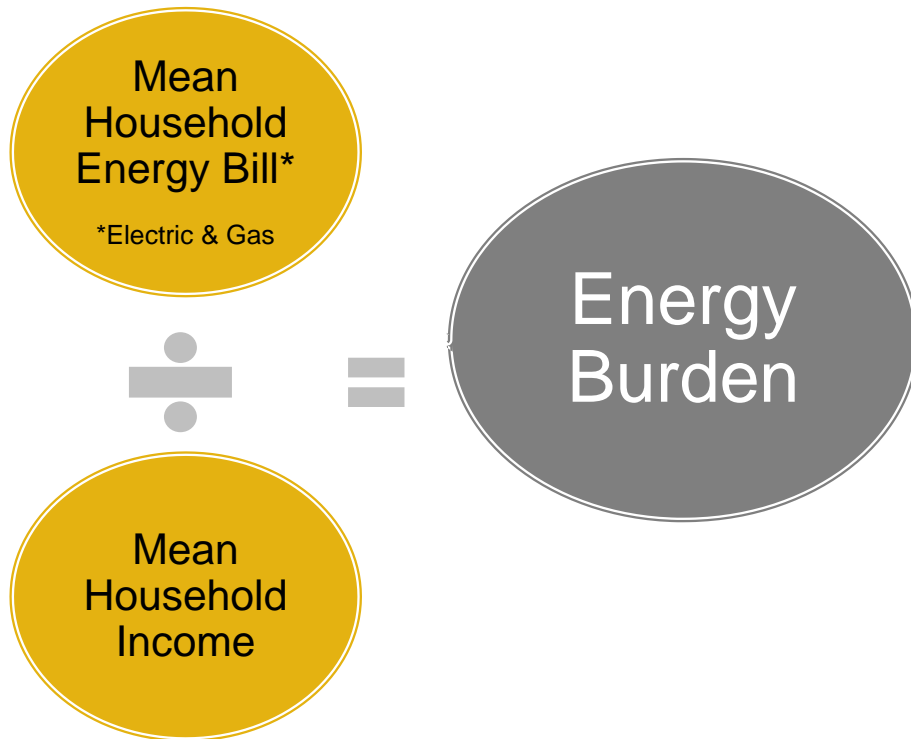
Marilyn Brown, Regents' Professor
Georgia Institute of Technology*

Georgia Smart Fall Workshop
September 6, 2018
Atlanta, Georgia

*Lessons from an ongoing Georgia Tech research project
(https://cepl.gatech.edu/projects/low_income)



What is an Energy Burden?



- There is no widely accepted value or threshold that establishes whether a household faces a high or unaffordable energy burden. (ACEEE, 2017)
- However, the U.S. Department of Health and Human Services classifies an energy burden of above 6% as “unaffordable” (Colton, What is the Home Affordability Gap, 2017)

Impetus for Study

Energy burdens in the 10 most burdened U.S. cities.

	All households	Low-income households*	Low-income multifamily households	African-American households	Latino households	Renting households
1	Memphis (6.2%)	Memphis (13.2%)	Memphis (10.9%)	Memphis (9.7%)	Memphis (8.3%)	Memphis (8.6%)
2	Birmingham (5.3%)	Birmingham (10.9%)	Birmingham (8.7%)	Pittsburgh (8.3%)	Providence (7.3%)	Birmingham (7.3%)
3	New Orleans (5.3%)	Atlanta (10.2%)	Atlanta (8.3%)	New Orleans (8.1%)	Philadelphia (7.3%)	Atlanta (6.8%)
4	Atlanta (5.0%)	New Orleans (9.8%)	Providence (7.1%)	Kansas City (7.9%)	Kansas City (6.6%)	New Orleans (6.3%)
5	Providence (4.7%)	Providence (9.5%)	Pittsburgh (7.1%)	Birmingham (7.7%)	Atlanta (6.6%)	Providence (6.2%)
6	Pittsburgh (4.5%)	Pittsburgh (9.4%)	New Orleans (6.9%)	Milwaukee (7.4%)	Birmingham (6.6%)	Kansas City (6.1%)
7	Kansas City (4.5%)	Dallas (8.8%)	Columbus (6.5%)	St. Louis (7.4%)	Phoenix (6.0%)	Pittsburgh (6.0%)
8	Fort Worth (4.4%)	Philadelphia (8.8%)	Dallas (6.5%)	Cleveland (7.0%)	Dallas (6.0%)	Cincinnati (6.0%)
9	Cincinnati (4.3%)	Kansas City (8.5%)	Indianapolis (6.5%)	Cincinnati (6.9%)	Fort Worth (5.7%)	St. Louis (5.9%)
10	Dallas (4.3%)	Cleveland (8.5%)	Kansas City (6.3%)	Atlanta (6.6%)	Detroit (5.7%)	Cleveland (5.5%)

* Low-income includes both single- and multifamily households.

Source: ACEEE, Lifting the High Energy Cost Burden in America's Largest Cities: How Energy Efficiency Can Improve Low Income and Underserved Communities

Many Factors Contribute to High Energy Burdens in Georgia

Numerator

- 35th in EE policies
- 2nd highest residential natural gas prices in country
- 5th highest average temperature in country
- Among highest in air conditioning and space heating use

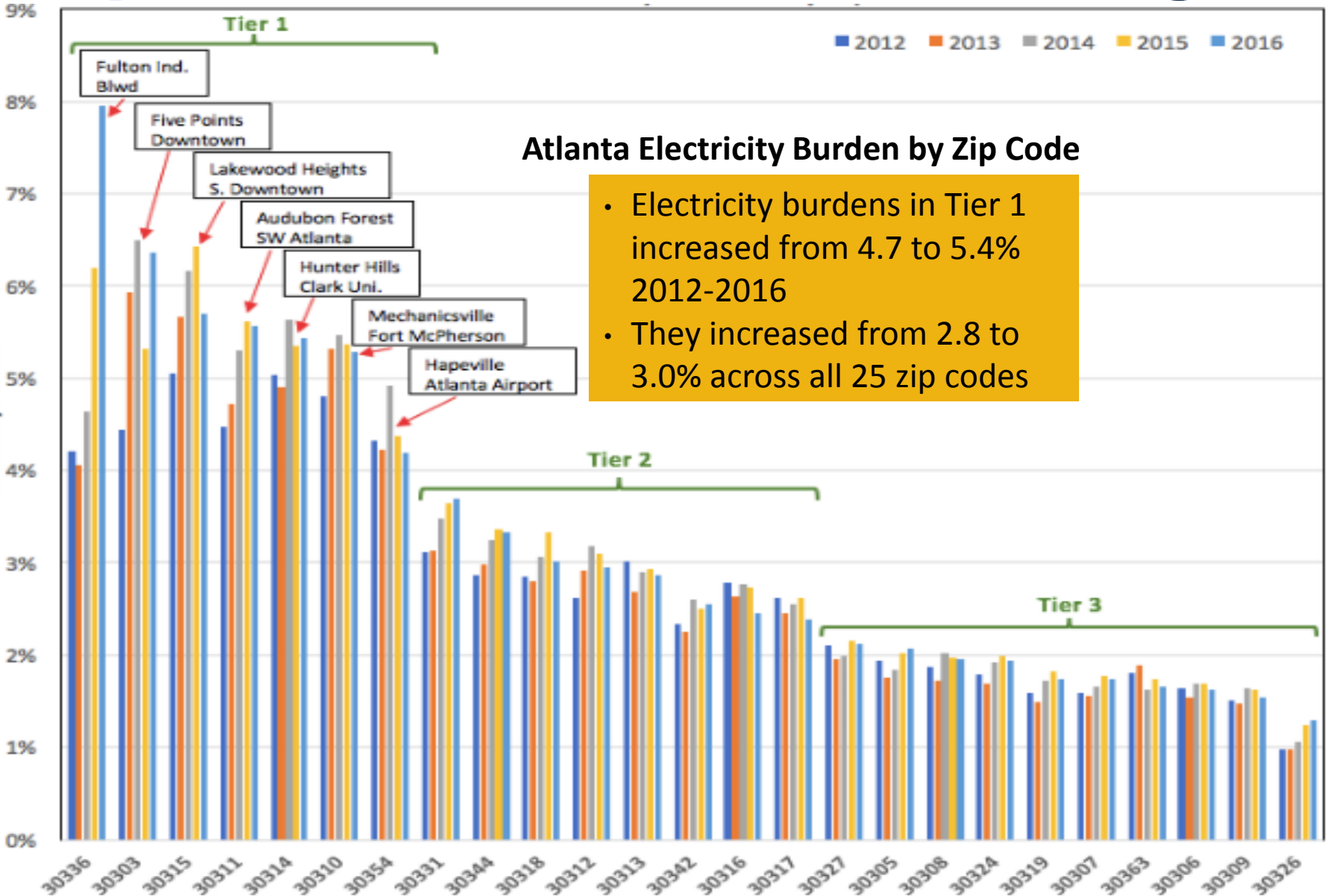
Denominator

- 41st in per capita income
- ~45% of Southern Co. customers at or below \$40K income (Southern Co.)
- The Southeast lags behind the rest of the nation in terms of % of residents living in poverty



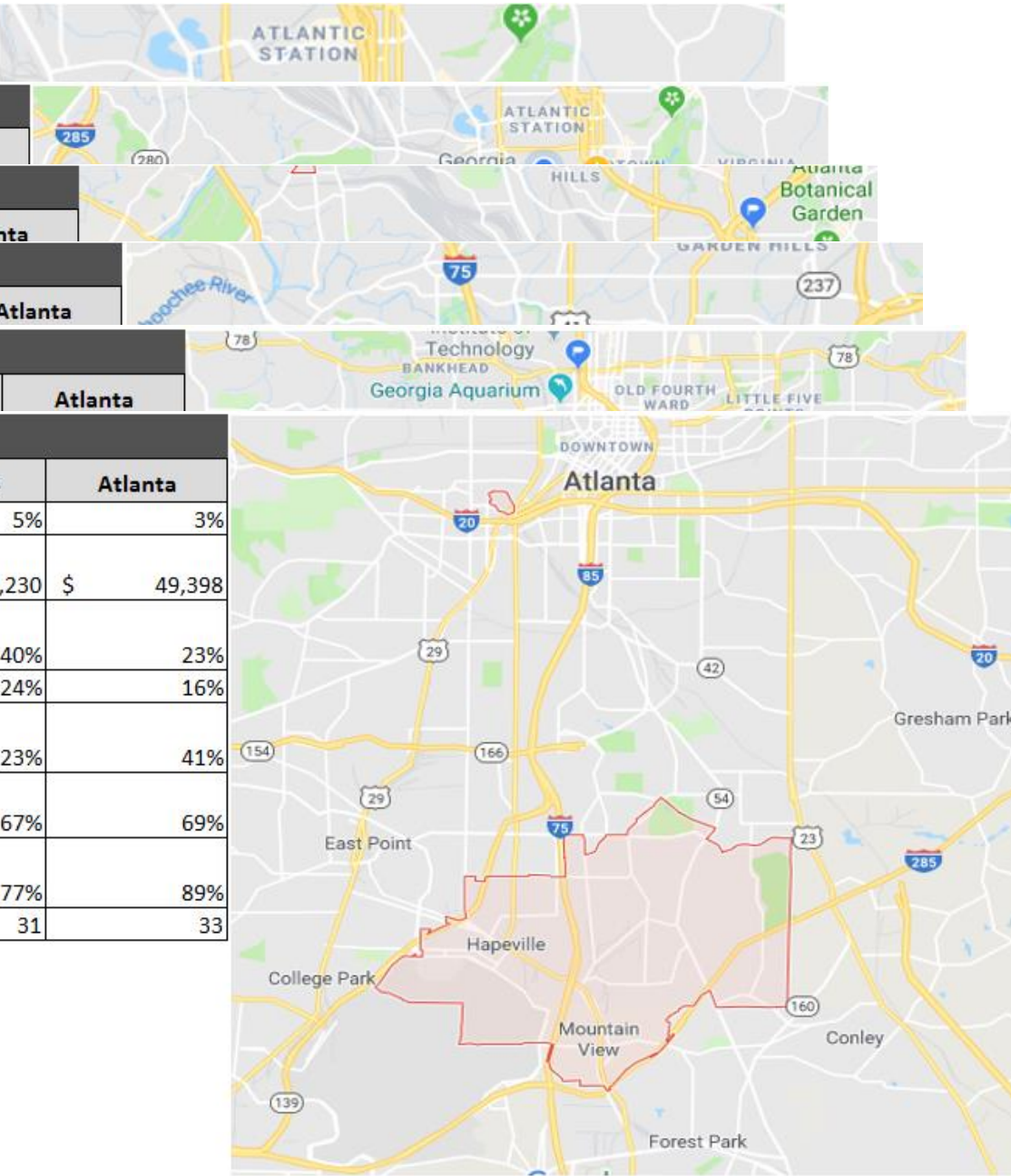
Source: EIA, [Household Energy Use in Georgia](#)

Electricity Burdens in Low-Income Zip Codes of Atlanta are Growing



What do these Tier 1 Zip Codes Look Like?

KEY STATS			
	30303	Atlanta	
Ene	KEY STATS		
Mec	30310	Atlanta	
Incc	KEY STATS		
Ene	KEY STATS		
Per	30311	Atlanta	
Med	KEY STATS		
Incc	30314	Atlanta	
Per	KEY STATS		
% C	30315	Atlanta	
with	KEY STATS		
% o	KEY STATS		
Fam	KEY STATS		
% H	KEY STATS		
or H	KEY STATS		
Mec	KEY STATS		
% H	KEY STATS		
or H	KEY STATS		
Ma	KEY STATS		
Dov	KEY STATS		
Mid	KEY STATS		
Ma	KEY STATS		
We:	KEY STATS		
Ven	KEY STATS		
Oak	KEY STATS		
Flor	KEY STATS		
Cas	KEY STATS		
Cas	KEY STATS		
Dixi	KEY STATS		
Grov	KEY STATS		
Hun	KEY STATS		
Moz	KEY STATS		
Peo	KEY STATS		
Surr	KEY STATS		
Ben	KEY STATS		
	30354		Atlanta
	Energy Burden	5%	3%
	Median Household Income	\$ 28,230	\$ 49,398
	Perc income below poverty-All people	40%	23%
	Perc No vehicles	24%	16%
	% Owned Households with Mortgage	23%	41%
	% of units that are Single Family Residential	46.67%	69%
	% High School Graduate or Higher	77%	89%
	Median Age	31	33
	Main Neighborhoods:		
	English Avenue		
	Peoplestown		
	Poncey-Highland		
	Reynoldstown		



Solutions: Expanded Partnerships & New Technologies

Low-Income Households

- Assess connections and gaps for optimizing the available pool of funding for structural repairs and safety, weatherization and energy efficiency, and water.
- Motivate innovative technologies for low-cost retrofits and approaches to personal comfort
- Prepare a baseline on education and awareness of energy efficiency and related resources among the residents of high energy-burdened communities
- Engage new information and communication technology to promote greater awareness

Core Principle: Awareness needed to link energy use & behavior

Cities: Energy Benchmarking, Green Leases, and “Trusted Contractors”

The City of Atlanta

- Mandated residential energy benchmarking (building code inspections and home energy ratings required when residential properties are sold)
- “Model” green lease made available to owners & tenants of MF rental units
- Work with absentee landlords of low-income rental units to promote energy affordability and sustainable development in one or more targeted zip codes
- Develop network of “trusted contractors”—like Solarize Atlanta’s choice of Creative Solar and Hannah Solar

Core Principle: Addressing the landlord/tenant problem

Utilities: Treat Affordable Energy as a “Material Issue”

Utilities

- Quantify arrearages, bad debt, disconnects and health benefits to justify expanding low-income program investments
- On-bill financing for owner-occupied housing
- Energy affordability is a material issue for utilities

Core Principle: Business case for scaling low-income utility programs requires coordinated, cost-shared partnerships.

**Electric Power Research Institute*

***Global Reporting Initiative/Sustainability Accounting Standards Board*

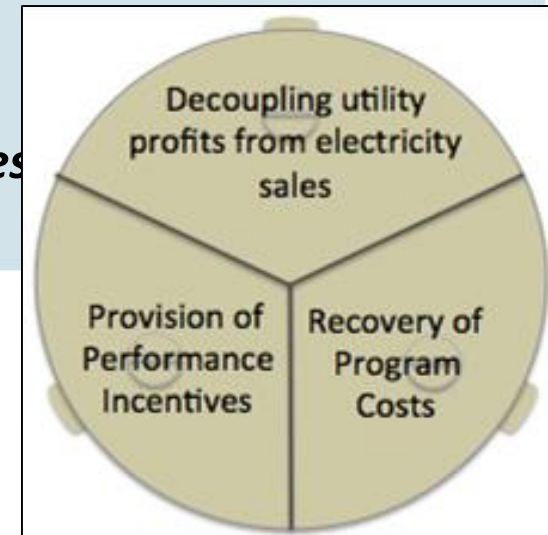
Public Service Commission: Align Incentives

The PSC and other State and Federal Partners

- Regulatory frameworks are needed to incentivize EE (& low income) programs via new/modified cost tests & non-energy benefits (NEBs)
- Rate designs can help or hurt and needs analysis
- Existing programs can be leveraged and coordinated

Core Principle: Energy burden is complex with solutions to root causes necessitating public policy reform + incentives

Source: Brown, Marilyn A., Benjamin Staver, Alexander M. Smith, and John Sibley. 2015. Alternative Business Models for Energy Efficiency: Emerging Trends in the Southeast, *The Electricity Journal*, 2015, 28 (4): 103-117.



The philanthropic community can promote success across all of these solutions.

Thank you.

Research Team & Collaborators

Team Member	Organization
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Sabrina Cowden Erik Froyd	Milepost Consulting

Collaboration Highlights:

- ▶ *Business, Public Policy, Engineering Expertise*
- ▶ *Faculty & Student Collaboration*
- ▶ *Enhanced stakeholder engagement via knowledgeable contractors*

Thanks to Southern Company and Georgia Power for providing mean values of household electricity and natural gas consumption data by zip code. Funding from Georgia Tech's Energy Policy and Innovation Center is appreciated.

Contact Information

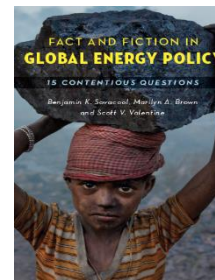
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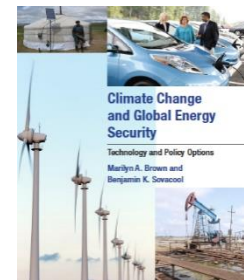
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2016



2015



2013